

ABSTRACT

The temperature of a bipolar semiconductor element using a wide-gap semiconductor is raised using heating means, such as a heater, to obtain a power semiconductor device being large in controllable current and low in loss. The temperature is set at a temperature higher than the temperature at which the decrement of the steady loss of the wide-gap bipolar semiconductor element corresponding to the decrement of the built-in voltage lowering depending on the temperature rising of the wide-gap bipolar semiconductor element is larger than the increment of the steady loss corresponding to the increment of the ON resistance increasing depending on the temperature rising.